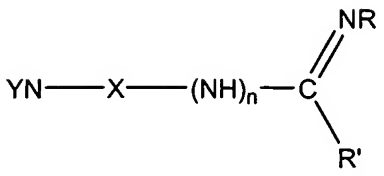
Claims

1. (Original) A compound of formula I



(I)

in which

YN is a morphine-like opioid radical;

X is
- a direct bond,
- a substituted or unsubstituted, branched, straight-chained or cyclic alkylene having from 1 to 6 carbon atoms, optionally containing one or two heteroatoms in the alkyl chain, or
- an optionally substituted, branched or straight-chained alkenylene having from 4 to 10 carbon atoms;

R and R' are independently hydrogen, alkyl, substituted alkyl, alkene, substituted alkene, alkyne, substituted alkyne, aryl, substituted aryl, heterocycle, substituted heterocycle or cyano; and

n is 0 when X is said direct bond, or n is 1 when X is said alkylene or alkenylene;

or a pharmaceutically acceptable salt, hydrate, solvate, pharmaceutically acceptable derivative, pro-drug, tautomer and/or isomer thereof.

2. (Original) The compound of claim 1, wherein R is H, alkyl, phenyl, substituted phenyl, heterocycle or substituted heterocycle.

3. (Currently amended) The compound of claim 1~~claims 1 or 2~~, wherein R' is H, alkyl, substituted alkyl, phenyl, substituted phenyl, heterocycle or substituted heterocycle.

4. (Currently amended) The compound of claim 1~~any one of claims 1 to 3~~, wherein at least one of R and R' is not H.

5. (Original) The compound of claim 4, wherein R' is not H.

6. (Currently amended) The compound of claim 1~~any one of claims 1 to 5~~, wherein the heterocycle or substituted heterocycle is heteroaromatic or substituted heteroaromatic, respectively.

7. (Currently amended) The compound of claim 1~~any one of claims 1 to 6~~, wherein the substituent on the aryl or heteroaryl group is a C_{1-6} alkyl group, haloalkyl, hydroxy, amino, alkoxy, haloalkoxy, cyano, nitro, alkylthio, thiol, a salt or ester of a phosphorous-containing acid or halo.

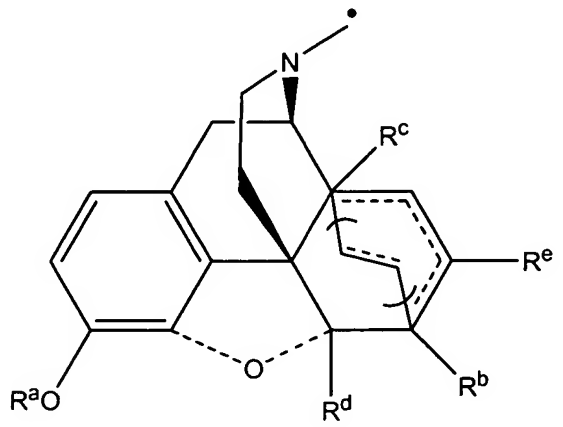
8. (Original) The compound of claim 1, wherein one or both of R and R' is substituted, and wherein the substituent or substituents are selected from aryl, substituted aryl, heteroaromatic, substituted heteroaromatic, haloalkyl, hydroxy, amino, alkoxy, haloalkoxy, nitro, alkylthio, thiol, cyano and halo.

9. (Original) The compound of claim 1, wherein R' is aryl or alkyl substituted with aryl, in which the aryl group is optionally substituted.

10. (Original) The compound of claim 9, wherein said aryl group is substituted by one or more substituents selected from alkyl, halo, alkoxy, hydroxy, nitro, cyano, a salt or ester of a phosphorous-containing acid and alkyl thio.

11. (Currently amended) The compound of claim 1~~any one of claims 1 to 10~~, wherein X is alkylene and n is 1.

12. (Currently amended) The compound of claim 1~~any one of claims 1 to 11~~, wherein the radical YN- is a radical of Formula II or Formula III:



II

wherein:

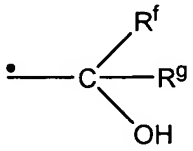
R^a is H, C_{1-4} alkyl, C_{1-4} alkanoyl, C_{1-4}carboxyalkyl, or an O-protecting group;

R^b is H, OH, protected hydroxy, C_{1-4}alkanoyloxy or C_{1-4}alkoxy; or, when C6 does not have a double bond to C7, and does not have an *endo*etheno or *endo*ethano bridge to C14, R^b may be =O or $=CH_2$;

R^c is H, OH or protected hydroxy;

R^d is H or C_{1-4} alkyl;

R^e is H, CN, C_{1-4}alkanoyl, C_{1-4}alkoxycarbonyl, C_{2-8} alkenyl,

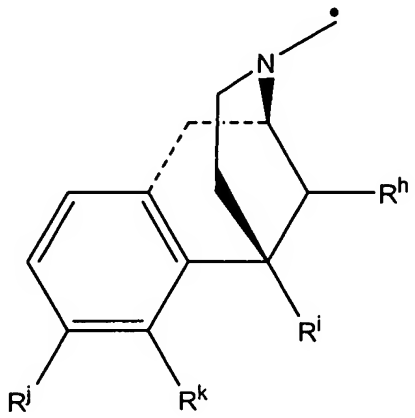


in which R^f is H, alkyl, aryl, or alkaryl, and R^g is C_{1-8} alkyl, C_{2-6}alkenyl, C_{2-6}alkynyl, each of these three groups being optionally substituted by aryl, or R^g is substituted aryl (the substituent(s) on the aryl group being chosen from halo, alkyl, C_{1-4}alkoxy, haloalkyl), tetrahydrofuranyl, C_{1-4} alkoxy;

wherein the oxygen between C4 and C5 may or may not be present, as represented by the broken lines;

wherein the brackets around the group between C6 and C14 represents that the group may or may not be present, and when present the group may be an *endo*etheno or an *endo*ethano bridge, as represented by the broken line; and

wherein the dashed line between C6, C7, C8 and C14 represents that there is or are either zero, one or two double bonds, with the one double bond being either between C6 and C7, or C7 and C8, and the two double bonds being between C6 and C7, and C8 and C14;



III

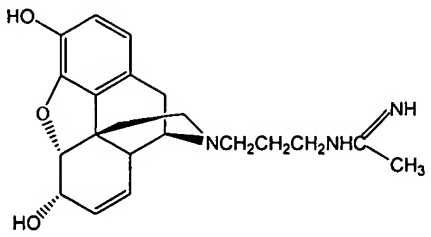
wherein
R^h is H or C_{1-4} alkyl;
R^i is H, OH, C_{1-4} alkanoyl or C_{1-4}alkyl;
R^j is H, OH, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy; C_{1-4} carboxyalkyloxy or protected hydroxy; and
R^k is H, OH, or protected hydroxy;
and wherein the two dashed lines represent that the two bonds may be both present or both absent.

13. (Original) The compound of claim 12, wherein the radical YN- is a radical of formula II.

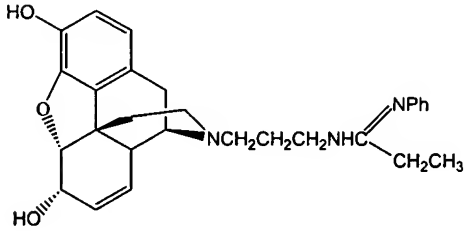
14. (Original) The compound of claim 12, wherein the radical YN- is a radical of a compound selected from the group consisting of morphine, codeine, heroin, ethylmorphine, O-carboxymethylmorphine, O-acetylmorphine, hydrocodone, hydromorphone, oxymorphone, oxycodone, dihydrocodeine, thebaine, metopon, etorphine, acetorphine, ketobemidone, ethoheptazine, diprenorphine (M5050), buprenorphine, phenomorphan, levorphanol, pentazocine, eptazocine, metazocine, dihydroetorphine and dihydroacetorphine.

15. (Original) The compound of claim 12, wherein the radical YN- is a radical of morphine, codeine, buprenorphine or diprenorphine.

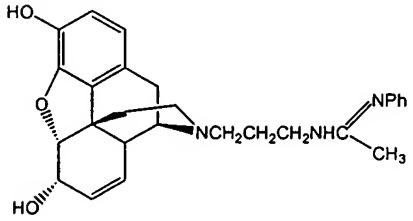
16. (Currently amended) A compound ~~The compound~~ selected from the group consisting of:



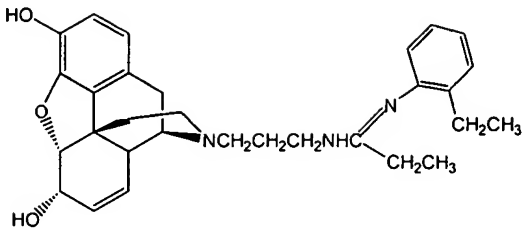
KRS-6-41



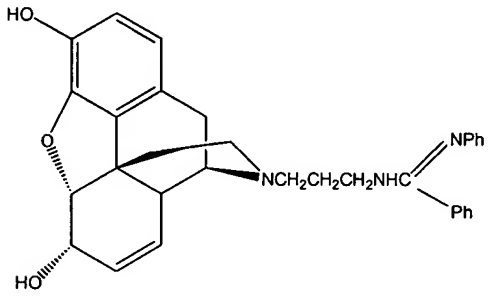
KRS-6-48

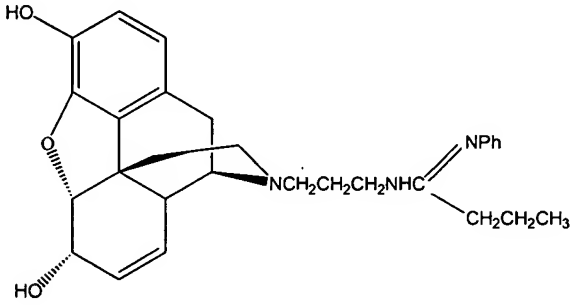


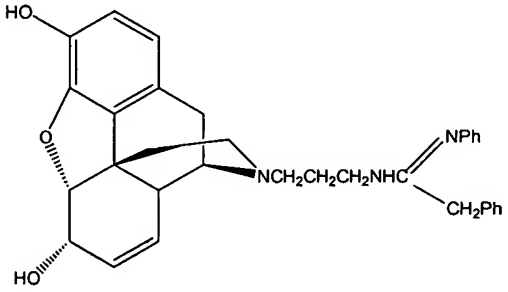
KRS-6-51

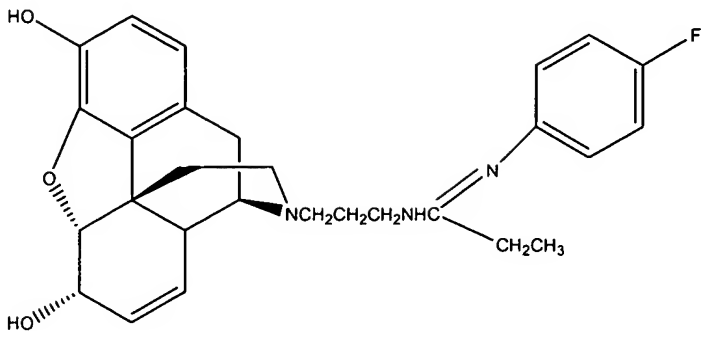

HO
O
HO
NCH2CH2CH2NHC
N
CH2CH3
CH2CH3

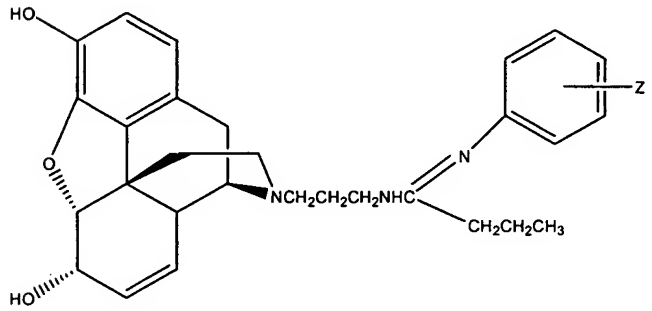
KRS-6-71


HO
O
HO
NCH2CH2CH2NHC
NPh
Ph


HO
O
HO
NCH2CH2CH2NHC
NPh
CH2CH2CH3

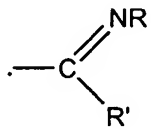

HO
O
HO
NCH2CH2CH2NHC
NPh
CH2Ph





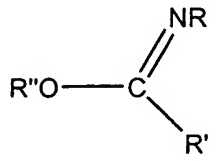
wherein Z is selected from alkyl, halo, alkoxy, hydroxy, cyano, nitro, alkyl thio, or a pharmaceutically acceptable salt, hydrate, solvate, pre-drug, tautomer and/or isomer thereof.

17. (Original) A process for the preparation of a compound of formula I as defined in claim 1 comprising the step of reacting a precursor for the radical YN- or YN-X-NH- with a precursor for the radical



in which YN-, X, R, R', R" and n are as defined in claim 1.

18. (Original) The process of claim 17, wherein the process includes the step of reacting YN-H or YN-X-NH_2 with a compound of formula



in which R and R' are as defined in claim 1, and R' is alkyl, substituted alkyl, aryl or substituted aryl, to form a compound of Formula I.

19. (Currently amended) A pharmaceutical or veterinary composition comprising a compound of claim 1~~any one of claims 1 to 16~~, and of a pharmaceutically or veterinarily acceptable carrier.

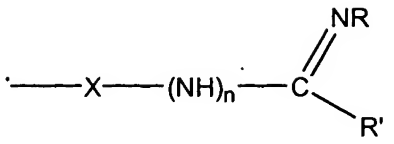
20. (Currently amended) A method of treatment and/or prophylaxis of a condition or symptom that is inhibited, reduced or alleviated by opioid receptor activation, comprising administering a therapeutically effective amount of the compound of claim 1~~any one of claims 1 to 16, or a composition of claim 19~~ to a subject in need thereof.

21. (Original) The method of claim 20, wherein the method involves the treatment and/or prophylaxis of pain in the peripheral nervous system with comparably less or no activity on the central nervous system.

22. (Currently amended) A method of inducing analgesia, comprising the step of administering an effective amount of a compound of claim 1~~any one of claims 1 to 16 or a composition of claim 19~~ to a subject in need of such treatment.

Claims 23–26. (Canceled)

27. (Original) A method of reducing the central nervous system activity of a morphine-like opioid, comprising the step of linking the nitrogen atom of the morphine-like opioid to the radical



in which X, R, R' and n are as defined in claim 1.